

## CLAIMS

1. Multi-mode Interferometric coupler comprising:
  - a first amplifying part (2),
  - a second transparent part (4) to guide radiation previously amplified in the first part.
- 5 2. Coupler according to claim 1, the first and second parts being separated by a curved interface (6).
3. Coupler according to claim 1, the first and second parts being separated by a "V" shaped interface (6).
- 10 4. Coupler according to claim 1, the first and second parts being separated by a zigzag shaped interface (6).
5. Coupler according to claim 1, the first and second parts being separated by an inclined interface (6) on the path of the input (8) and the output (10) rays.
- 15 6. Coupler according to claim 1, the first and second parts being laid out to be approximately perpendicular to the path of an incident beam (8) and an output beam (10).
- 20 7. Coupler according to any one of the previous claims, a single mode guide being placed at the output from the second part.
8. Coupler according to one of the previous claims, the amplifying material being a structure embedded in an InP substrate.
- 25 9. Coupler according to any one of claims 1 to 7, the amplifying material being a laser material.
10. Coupler according to claim 9, the laser material being made of InGaAsP quaternary.
- 30 11. Coupler according to any one of claims 1 to 7, the amplifying material having quantic wells.
12. Optical amplifier comprising:

- an optical preamplifier,
- a coupler according to one of claims 1 to 11.

13. Process for amplifying the power of a light source emitting radiation, consisting of placing a  
5 coupler according to one of claims 1 to 11 or an optical amplifier according to claim 12, on the path of the said radiation.

14. Process to compensate for the losses in an optical fiber consisting of placing a coupler according  
10 to one of claims 1 to 11 or an optical amplifier according to claim 12, on the path of the radiation passing through the optical fiber.

15. Process for the amplification of signals multiplexed in wave length, consisting of increasing  
15 the output power level using a coupler according to one of claims 1 to 11, or an optical amplifier according to claim 12.